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given, and dates of birth and death, where known. The importance of the latter is evident, as a clue to the dates of publication, for it has been the custom among most map publishers to omit the date. For obviously, since people as a rule are not very particular about maps, and know very little about them, it has always been a temptation to the publisher to make an old plate do in a new publication.

As no other library "has published a complete description of its atlas material it is impossible to state authoritatively how the collection in the Library of Congress compares in size and importance with others." But these two volumes certainly attest to long and assiduous collecting. To start at the beginning, of the forty known editions of Ptolemy, all but three are in this collection. In cartographic material relating to America the collection is especially rich and complete.

To all students in geography and history, these volumes will come as a welcome instrument of research. It will be of the highest value to be able to turn to the index for a place name, and to find there listed every atlas in the collection pertaining to the region, and in the more important publications to find even the description of every map in the atlas of the region. It will save endless search and will settle in a minute at your own desk, whether or not you have all the available material bearing on your particular quest.

Yet a hasty scanning of the collection seems to show a shortage of the most recent published material. And it raises the question, whether or not the appropriations for this division are generous enough to permit the acquisition of such fine atlas material as is available from the working presses of the day in the various lands. These two volumes at once will turn the attention of all the country to this collection, and it will be looked to whenever a map or atlas is desired. It is likely to raise uncomfortable questions when some of the best modern material from various lands is not found listed.

J. PAUL GOODE

UNIVERSITY OF CHICAGO,
May 23, 1910

SCIENTIFIC JOURNALS AND ARTICLES

THE April number (volume 11, number 2) of the *Transactions of the American Mathematical Society* contains the following papers:

Edward Kasner: "The theorem of Thomson and Tait and natural families of trajectories."

F. W. Owens: "The introduction of ideal elements and a new definition of projective n space."

Arthur Ranum: "The groups of congruent quadratic integers with respect to a composite ideal modulus."

G. D. Birkhoff: "A simplified treatment of the regular singular point."

L. M. Hoskins: "The strain of a gravitating, compressible elastic sphere."

THE May number (volume 16, number 8) of the *Bulletin of the American Mathematical Society* contains: Report of the February meeting of the Society, by F. N. Cole; Report of the February meeting of the San Francisco Section, by C. A. Noble; "An application of the notions of general analysis to a problem of the calculus of variations," by Oskar Bolza; "The infinitesimal contact transformations of mechanics," by Edward Kasner; "On an integral equation with an adjoined condition," by Anna J. Pell; "The unification of vectorial notations" (review of Burali-Forti and Marcolongo's *Calcolo vettoriale and Omografie vettoriali*), by E. B. Wilson; Shorter notice of Meyer's *Allgemeine Formen- und Invariantentheorie*, volume 1, *Binäre Formen*, by Virgil Snyder; "Notes"; "New Publications."

THE June number of the *Bulletin* contains: Report of the April meeting of the society, by F. N. Cole; Report of the April meeting of the Chicago Section, by H. E. Slaughter; "Groups generated by two operators each of which is transformed into a power of itself by the square of the other," by G. A. Miller; "The solution of an integral equation occurring in the theory of radiation," by W. H. Jackson; Review of Grassmann's *Projective Geometrie der Ebene*, by L. W. Dowling; Review of Schlesinger's *Lineare Differentialgleichungen*, by E. J. Wilczynski; "Shorter notices": Bonola's

Geometria noneuclidea and Liebmann's German translation, by Arthur Ranum; Nichol's Analytic geometry, revised edition, and Wentworth and Smith's Complete arithmetic, by G. H. Scott; Wangerin's Theorie des Potentials und der Kugelfunktionen, by J. B. Shaw; Timerding's Geometrie der Kräfte, by W. R. Longley; "Notes"; "New Publications."

BOTANICAL NOTES

FORESTS AS GATHERERS OF NITROGEN

At a meeting of the Society of American Foresters, on March 31, 1910, a paper was read by Mr. Treadwell Cleveland, Jr., on "Forests as Gatherers of Nitrogen." This paper summarized results recently obtained by Jamieson, of Scotland, and by Zemplen and Roth, of the Royal Hungarian Experiment Station at Selmechanya, which tend to show that forests are able to appropriate free atmospheric nitrogen by means of their trichomes. Jamieson investigated several forest trees (as well as a number of smaller plants), among which were *Acer campestre*, *Tilia europaea*, *Ulmus campestris*, *Sorbus aucuparia*, *Fagus silvatica* and *Picea concolor*. Zemplen and Roth included a large number of additional species. In all cases chemical tests show the presence of nitrogen in the trichomes, and the investigators believe that they have excluded all other sources for this nitrogen than the atmosphere. Professor Henry, of the Forest School at Nancy, France, was the first to point out that forest soils are enriched in nitrogen by the decay of fallen leaves.

Zemplen and Roth are cautious in their conclusions, and urge that further investigations be made in this field.

A STUDY OF PEAT-BOG FLORAS

In the last Report of the Iowa Geological Survey Professor L. H. Pammel discusses the peat flora found in the swamps and marshes of Iowa. For the bog formations he follows C. A. Davis's monograph. These bogs are not of the *Sphagnum* type usually associated

with the term, but are listed by the author as follows: Quaking aspen bog, willow bog, grass and sedge marshes, rush marshes, moss bogs. The bog floras of Iowa, Wisconsin, southern Michigan and the Dismal Swamp Virginia are compared from a list of three hundred or more plants, showing strikingly the differences in their constitution.

The following observations may be noted. *Sphagnum*, *Larix laricina*, *Thuja occidentalis* and *Picea mariana* are not found in the state. Heaths are absent from the swamp flora. Of the fifteen plants listed by Transeau as characteristic of the bogs of northern America only five are found in the bogs of Iowa. Certain plants common to the peat bogs of regions farther north are not in the bogs of Iowa but are found in the colder and less fertile locations. *Carex filiformis* is the best peat former in the state.

The author discusses the important contributions to the subject, and gives a bibliography.

THE PRINCIPLE OF HOMOEOSIS

ABOUT a year ago Professor R. G. Leavitt published (*Bot. Gaz.*, January, 1909) a paper entitled "A Vegetative Mutant and the Principle of Homoeosis in Plants," which has not received the attention it deserves at the hands of botanists, no doubt partly due to the fact that it was not fully understood, and also that botanists, as a rule, are not greatly interested in underlying principles. They are so busy with the collection of solid facts of one kind and another that such "vague and insubstantial" things as principles have little attraction for them. This may account for the assertion made by a well-known professor of philosophy in a gathering of botanists a few years ago, namely, that "while botany has had many eminent men, it has been singularly unproductive in giving to the world any conspicuous general principles." Be this as it may, the fact remains that scant attention has been given to the paper here referred to, and to the principle which it sets forth.

Beginning with some familiar cases of leaf abscission, and of the decomposing of